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**REMARKS**

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

By this amendment, new claims 81-90 have been introduced. Descriptive support for these claims and the amendments to claim 7 are provided at page 27, lines 20-26 and page 32, lines 7-9 of the present application.

The objection to the disclosure is obviated by the above amendments to the specification and, therefore, should be withdrawn.

The objection to claims 46, 47, 49, 51, 53, 54, 62, and 63 is respectfully traversed in view of the cancellation of these claims.

The rejection of claim 10 under 35 U.S.C. § 112 (2nd para.) for indefiniteness is respectfully traversed in view of the cancellation of this claim.

The rejection of claims 38-41, 44, 45, 48, 52, 61, and 68-72 under 35 U.S.C. § 112 (1st para.) as lacking written descriptive support is respectfully traversed in view of the cancellation of these claims.

The rejection of claims 7-10, 22, 28-29, 44-45, 52, 61, 68-72, and 74-80 under 35 U.S.C. § 112 (1st para.) as lacking enablement is respectfully traversed

It is the position of the U.S. Patent and Trademark Office ("PTO") that the specification does not provide sufficient guidance in establishing regions of the protein structure which may be modified without effecting tau (or gamma) subunit activity, the general tolerance of the tau (or gamma) subunits to modification, and a rational and predictable scheme for modifying any amino acid residue of the tau (or gamma) subunit. Applicants respectfully disagree.

The PTO is respectfully reminded that all that is needed is objective enablement of what is claimed. *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). The present application provides the nucleotide sequence of *Thermus thermophilus dnaX* (e.g., SEQ ID NOs: 1 and 3) and describes how one of ordinary skill can isolate homologs of the disclosed sequence (*see* page 34, line 7 to page 35, line 12; Example 1), express the tau (or gamma) subunits encoded by such homologous *dnaX* sequences (*see* Examples 2-6), and test the encoded tau (or gamma) subunit for activity (*see* Examples 6 and 8). Thus, in light of the above amendments, one of ordinary skill in the art would have been fully able to make and use polynucleotides and proteins within the scope of the presently claimed invention.

Methods of identifying and producing variants of *T. thermophilus* Pol III  $\gamma$  and  $\tau$  subunits have been practiced by those skilled in the art subsequent to the effective filing date of the present application. See McHenry et al., "A DNA Polymerase III Holoenzyme-like Subassembly from an Extreme Thermophilic Eubacterium," *J. Mol. Biol.* 272:178-189 (1997) (attached hereto as Exhibit A) ("McHenry"). McHenry teaches the identification of 63 and 50 kDa protein products of the *T. thermophilus* *dnaX* gene as the  $\gamma$  and  $\tau$  subunits of *T. thermophilus*. Upon a nucleotide sequence comparison between the full *T. thermophilus* *DnaX* gene of McHenry, and that of the present invention, 98% homology was observed (attached hereto as Exhibit B). Nucleotide sequence comparisons, and amino acid sequence comparisons, were performed using the ClustalW sequence analysis program provided by the European Bioinformatics Institute. Amino sequence analysis of the  $\tau$  translation product of McHenry with that of the present invention, shows a 98% homology (attached hereto as Exhibit C). Amino sequence analysis of the -2 frameshift and -1 frameshift  $\gamma$  translation products of McHenry with that of the present invention, shows a 97% homology for both  $\gamma$  translation products (attached hereto as Exhibits D and E, respectively). For this reason, it is apparent that the present application fully enables the production of variants encoding the DNA-polymerase type-III  $\tau$  and  $\gamma$  subunits of *T. thermophilus* as well as the production of polypeptide variants of the polymerase type-III  $\tau$  and  $\gamma$  subunits of *T. thermophilus*, within the presently claimed homology range.

It should be noted that the present application claims priority to U.S. Provisional Patent Application Serial No. 60/043,202, which was filed on April 8, 1997, and which disclosed the full polynucleotide and amino acid sequences of *T. thermophilus* Pol III  $\gamma$  and  $\tau$  subunits. Since this priority application was filed approximately 5 months prior to the publication date of McHenry, it is clear that McHenry is not prior art.

Therefore, the rejection under 35 U.S.C. § 112 (1<sup>st</sup> para.) for lack of enablement is improper and should be withdrawn.

The rejection of claim 27 under 35 U.S.C. § 112 (1<sup>st</sup> para.) for lack of enablement is respectfully traversed in view of the cancellation of this claim.

In view of all of the foregoing, applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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